

The unique characteristics of each suitable intersection could, of course, affect the overall cost of construction for any of the designs presented. These cost estimates were based upon NCDOT provided estimates and any adjustments to the costs were based upon general assumptions of the research committee.

To effectively compare the benefit/cost ratios of the suitable intersections with those of the unconventional design, it was necessary to determine the operations and maintenance costs of an intersection and factor them with construction costs. The operations and maintenance costs were gathered from NCDOT personnel. They included annual utilities costs of \$600 per year. The costs of preventative maintenance and routine or emergency repairs was approximately \$2,000 per year. Also included in the given operations and maintenance costs were replacement signal cabinet costs; about \$12,000 every ten years. NCDOT also stated that the typical life of an intersection was 20 years.

After the operations and maintenance costs were finalized, it was necessary to determine the cost of delay for each suitable intersection and intersection type. The delay, found in the SYNCHRO output files, was multiplied by \$15/vehicle/hour [9]. The cost of delay was determined by the research committee to be reasonable. This estimate was also based upon the assumption of one occupant per vehicle. The delay for each suitable intersection was found and multiplied by the factor. Then, the delay for each intersection type at the corresponding maximum volume was found and multiplied by the cost. A summary of the costs for each intersection and each intersection type at the corresponding volumes can be seen in Table 9.

Table 9. Delay Costs

Intersection	Delay Cost (\$/hr)							
NC Hwy 280 & Forge Mountain Road	1515.6	411.1	315.0	473.0	215.7	161.8	250.4	263.0
US Hwy 19-74-129 & Locust Street	1400.7	782.3	531.8	882.5	266.4	178.5	294.8	513.4
NC Hwy 152 & Old Concord Road	738.3	177.7	107.5	125.2	114.3	73.8	100.8	98.4
US Hwy 29 & Pitt School Road	1677.5	782.3	531.8	882.5	266.4	178.5	294.8	513.4
US Hwy 74 & Forest Hills School Road	997.6	295.8	216.7	297.6	175.4	137.6	182.3	203.5
US Hwy 158 & US Hwy 258	1300.8	782.3	531.8	882.5	266.4	178.5	294.8	513.4
	Existing	Continuous Flow	CTO	Echelon	Median U-turn	Michigan Diamond	Quadrant	SPUI

After the cost of delay was found, the next step was to determine the change of (Δ) delay. This was done by subtracting the costs of delay of each intersection type from the existing delay cost of each intersection. For example, the Δ delay for NC Hwy 280 & Forge Mountain Road and the Continuous Flow was \$1104.4/hour (\$1515.6-\$411.1). The Δ delays for each intersection versus intersection type are summarized in Table 10.